



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/582,239 | 06/09/2006 | Nobuaki Matsuoka | 292337US26PCT | 1964 |
| 22850 | 7590 | 01/22/2010 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | | FORD, NATHAN K |
| ART UNIT | | PAPER NUMBER | | |
| 1792 | | | | |
| NOTIFICATION DATE | | | DELIVERY MODE | |
| 01/22/2010 | | | ELECTRONIC | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/582,239 | MATSUOKA ET AL. | |
| | Examiner | Art Unit | |
| | NATHAN K. FORD | 1792 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11/5/09.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-7,9-12 and 14-23 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-7,9-12 and 14-23 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION*Applicant's Response*

Acknowledged is the applicant's request for continued examination received November 5, 2009. Claims 1, 4, 14, and 20-21 are amended.

The examiner has considered the applicant's arguments but they are rendered moot by the submission of a new grounds of rejection elaborated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-7, 11-12, and 14-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto, US 6,464,789, in view of Slocum et al., US 5,733,024, and Cheng et al., US 6,802,935.

Claims 1-2, 4-5, 14-20, 22-23: Akimoto discloses a substrate processing apparatus comprising (Fig. 1):

- A carrier block (2) including:
 - A carrier placement portion (5);
 - A substrate carrier (C);
 - A first transfer means (6);
- A transfer block (3) including:
 - A second transfer means (12) adjacent to the carrier block and traversing a transfer path;
 - Wherein the transfer path extends from the interface to the carrier block;
 - A utility unit (10) (3, 34-36);
- A first delivery stage (33) performing substrate delivery between the first and second transfer means;
- A plurality of process blocks positioned on one side of the transfer path, each comprising (Fig. 2):
 - A resist coating processing unit (8) (3, 27-36);
 - A developing unit (9);
 - A third transferring means (13);

Art Unit: 1792

- A second delivery stage (15);
- A light exposure machine (E);
- An interface (4) disposed between the exposure machine and the transfer path.

Regarding the sequencing of processing operations: A recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations (*Ex parte Masham*, 2 USPQ2d 1647). Akimoto's system is capable of reproducing the applicant's claimed sequence.

Akimoto is silent concerning the attachment means of the process blocks. In supplementation, Slocum describes a modular photoresist system which employs an exemplary kinematic coupling system (2, 30-48). Each process block (14) engages the frame (12) of the transfer block by means of a kinematic coupling (16), wherein pressure must be applied to secure the attachment (5, 28-32). This configuration advantageously enables the facile detachment of the modules for servicing and permits their automatic realignment, thereby obviating the difficulties of recalibration (6, 3-6). In light of this disclosure, it would have been obvious to the skilled artisan to kinematically affix Akimoto's process modules to the transfer block to enable easy detachment and realignment. It should also be noted that Slocum provides electrical wiring and processing fluid connection ends within the transfer frame, which become activated when the modules engage the frame (7, 54-58; 8, 8-30).

Lastly, Akimoto does not provide each processing block with a transfer unit – rather, one transfer unit services all blocks – and also does not provide a heating unit within the process blocks – rather, the heating units (11) are disposed opposite the process blocks.

Concerning the former deficiency: Cheng discloses a semiconductor system wherein each processing chamber possesses a dedicated transport mechanism (Fig. 3). This configuration increases throughput and prevents cross-contamination between modules (claim 15). Accordingly, it would have been obvious to the skilled artisan to outfit each module with a dedicated transport mechanism to expedite processing.

Concerning the latter: Akimoto articulates the concept of composing a single process block (9) with units which perform different types of processing -- in this case, developing and coating. This configuration enables the execution of multiple wafer processes at the same location, thereby expediting wafer fabrication. It is the examiner's position that one of ordinary skill could reasonably generalize this principle -- that is, determine that it would be obvious to incorporate within a given process block whatever processing units are required by the instant operation. In this instance, Akimoto intends to heat the wafer. Accordingly, it would have been obvious to the skilled artisan to

Art Unit: 1792

incorporate a heating unit with the process block to enable single-site developing, coating, and heating, thereby increasing throughput by reducing the time needed for wafer transfer.

Claim 6: A recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations. The apparatus is capable of applying a precursor to a substrate.

Claim 7: Figure 1 of Akimoto depicts two process blocks (9) of identical width and length. Further, it has been held that the configuration of the claimed element is a matter of choice which a person of ordinary skill would have found obvious (*In re Dailey*, 149 USPQ 47).

Claim 11: Slocum disposes a positioning member (26) beneath the modules to facilitate their engagement (5, 42ff; Fig. 20).

Claim 12: With reference to Figures 3-5 of Slocum, element 26 may be interpreted as the “guide member,” whereas elements 24 formed therein may be considered the “positioning members.”

Claim 21: Although Akimoto does not disclose the carrier block as being detachable, it would have been obvious nevertheless to the skilled artisan to render the block detachable for those reasons articulated by Slocum – to facilitate its easy removal for cleaning and servicing.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto in view of Slocum and Cheng and in further view of Masayki et al., JP 10-012528, wherein machine translation was used.

As stated above, Akimoto's exposure device is connected to the side of the transfer path opposite the carrier block rather than the process blocks. As an alternative, Figure 1 of Masayki delineates the claimed arrangement, thereby demonstrating its suitability. It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the interface of Akimoto according to the paradigm of Masayki to achieve the predictable result of substrate processing. Further, it has been held that rearranging the parts of an invention involves only routine skill in the art (*In re Japikse*, 86 USPQ 70).

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto in view of Slocum and Cheng and in further view of Cakmakci, US 4,836,968.

As demonstrated above, Slocum teaches the feature of detachable chambers, although hinges are not relied upon. Nevertheless, an express suggestion to substitute one equivalent component or process for another is not necessary to

Art Unit: 1792

render such substitution obvious (*In re Fout*, 675 F.2d 297, 213 USPQ 532). Cakmakci articulates the general principle of attaching two chambers with a hinge to enable rotation about an axis, thereby demonstrating the equivalence of hinged attachments for the purpose connecting two discrete structures. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to affix Akimoto's modules to the transfer block via hinge.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Nathan K. Ford whose telephone number is 571-270-1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/N. K. F./

Examiner, Art Unit 1792

/Karla Moore/

Primary Examiner, Art Unit 1792